Revised 3/00

CORRES CONTROL
INCOMING LTR NO

00360 RF 00

DUE DATE
ACTION

DIST	LTR	ENC
BACA, T		
BOGENBERGER, V		
BRAILSFORD, M D		
CARD, R G		
COX, C M		
CRAWFORD, A C		
DERBY, S		
DIETERLE, S E		
FERRERA, D W		
FERRERA, K P		
FERRI, M S		
FULTON, J C		
GERMAIN, A L		
GIACOMINI, J		
HARROUN, W P		
HEDAHL, T G		
ISOM, J H		
LEONARD, R C		
MARTINEZ, L A		
NORTH, K	✓	
PARKER, A M		
PHILLIPS, F J	✓	
RODGERS, A D		
SANDLIN, N B		
SHELTON, D C		
SPEARS, M		
TUOR, N R		
VOORHEIS, G M		
WARTHER, R F		
Brooks, L	✓	
Bogan, E	✓	

COR. CONTROL	X	X
ADMN. RECORD	✓	✓
PATS/T130G		

Reviewed for Addressee
Corres Control REP

4/4/00
Date

By

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DOE ORDER #

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RFETS-COR

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Colorado Department of Public Health and Environment

MAR 0 7 2000

00-DOE-01756

Dear Stakeholder

Parties to the Rocky Flats Cleanup Agreement (RFCA) proposed modifications to the Rocky Flats Environmental Technology Site Action Levels and Standards Framework for Surface Water, Ground Water and Soils (ALF) pursuant to RFCA paragraphs 253 and 117 on July 28, 1999 The proposed modifications were open to a 45-day public review and comment period Enclosed is a responsiveness summary to comments received during the public comment period and a redline/strikeout version of the text showing the changes proposed on July 28, 1999 The revised ALF that incorporates the proposed modifications and comments received during the public comment period will be included in the RFCA update package scheduled for distribution in February 2000

No modifications were proposed to the Radionuclide Soil Action Levels (RSALs) on July 28, 1999 The RFCA parties have deferred considering proposals to modify the existing RSALs until completion of the ongoing independent scientific review of the RSALs

If you have any questions, please contact one of the RFCA Project Coordinators listed below

Sincerely,

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ADMIN RECORD
SW-A-003948

Responses to ALF comments raised by Westminster and Broomfield

August 20, 1999 letter from Westminster

Paragraph 2
All Rocky Flats Cleanup Agreement (RFCA) documents These documents should note that the temporary modifications do not apply to Pond C-2 of Segment 5 of Big Dry Creek

Westminster is correct that the temporary modifications for americium, plutonium, nitrate, and nitrite do not apply to Pond C-2 of Segment 5 of Big Dry Creek and this will be noted Footnotes to Table 1 explain that these temporary modifications apply to Walnut Creek only. The remaining temporary modifications for organics do apply to Segment 5 in both drainages

Paragraph 5
Attachment 5, Page 5-8, Section 2 4, Action Determination, states that if standards are exceeded at a point of compliance, DOE will inform the CDPHE and EPA of such exceedance within 15 days of gaining knowledge of the exceedances Violations of the Clean Water Act by other entities such as local governments require notification within 24 hours Please provide information as to why an exception to this rule is included in RFCA

The proposed modifications to ALF did not affect this section. In addition, the Site is a regulated CERCLA site and this is not a CWA issue The site will inform the regulatory agencies and the Cities within 24 hours (one business day) of obtaining validated analytical results The 15-day time frame was specified in the original ALF in order to account for the need to validate radiological analyses Due to the nature of radiological analysis, it is in the best interest of everyone concerned to validate that any analysis is correct before distributing it

Paragraph 6
According to the current revisions to the RFCA, the Ecological Risk Assessment Methodology will be used to evaluate remediation or management of a contaminated area if it becomes necessary Does this methodology adequately provide guidance for the protection of human health and welfare? This should be the number one concern for evaluating remediation or management of a contaminated area at the site Please provide the City of Westminster with a copy of the methodology document and any additional information that is available related to this decision

The Ecological Risk Assessment Methodology (ERAM) is the "approved methodology" mentioned in the original ALF The ERAM is found in Section 2 4 2 of RFCA Attachment 6 The ERAM is designed to protect the ecology of an area and is applied in addition to human health risk assessment The protection of human heath and welfare is based on Colorado water standards, Maximum Contaminant Levels, dose- or risk-based Soil Action Levels, etc.

September 13, 1999 letter from Westminster

We would refer you to Attachment 5, Page 5-4 of the original document date July 19, 1996, and the new document same page number, dated May 17, 1999 Section 2 1 Basis for Standards and Action Levels from the original document states that "Local municipalities will be involved and consulted in surface water decisions" The May 17 documents states that "local municipalities, including Westminster, Broomfield, Thornton and Northglenn have been and will be involved and consulted in recommendations to the Water Quality Control Commission"

Westminster believes that there is a significant difference in the language from the 1996 document, which allows the City to be involved and consulted in surface water decisions According to the 1999 changes the City's participation will be much narrower and allowed only on issues related to recommendations to the

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Water Quality Control Commission Therefore, we do not accept nor support these changes to the RFCA and recommend that the RFCA regulators retain the original language as stated in the July 19, 1996 document

The first paragraph in Section 2 of ALF committed the parties to petition the WQCC to make changes to certain surface water standards Since that process has now been completed, this paragraph is dated, and was removed and replaced with language from the last paragraph of the original Section 1 The intent of the change was not to limit the involvement of the Cities Section 2 1 has been revised to include a sentence that reads, "Local municipalities, including Westminster, Broomfield, Thornton, and Northglenn, have been and will be involved and consulted in surface water decisions, including recommendations to the WQCC " Paragraph 53 of RFCA states "Consultation will include consideration of their advice and comments pertaining to key policy and strategic decisions such as land use, water quality . These organizations and persons will be invited to participate early in the formulation of such policies and prioritization of RFETS activities " RFCA requires the RFCA Parties to involve local governments in decisions regarding water quality, and we will continue to abide by this requirement

City of Broomfield letter dated September 16, 1999

Paragraph 1
The City of Broomfield requests that in the future, pre-existing documents that are being distributed for public review include a "redline" version in order to facilitate the review and comment process

In the future, a "redline" version will be provided for public comment

Paragraph 2 - Participation of Municipalities in Surface Water Decisions Should Not Be Compromised
In previous versions of the ALF, Section 2 1stated that "Local municipalities will be involved and consulted in surface water decisions " This statement has been deleted from the current version of the ALF As a downstream receiver and asset holder of surface water flows from RFETS, the City of Broomfield must continue to be involved and consulted in surface water decisions The City of Broomfield requests that the statement at the beginning of this paragraph be restored in ALF

See above response to Westminster

Paragraph 3 - Soil Put-Back Levels Should Be Explained in Detail Project-Specific Decision Documents
We agree with the ALF, that any time excavated soils are proposed for being reburied onsite, that a decision document be developed and distributed for public review and comment The decision document must evaluate remedy effectiveness and protectiveness, anticipated future land uses, and potential for contaminants to affect surface water quality

Soil put-back levels will continue to be explained in appropriate decision documents that will be available for public review and comment

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Paragraph 4 - Water Management Documents Need Updating
The City participated in the recent hearing before the Colorado Water Quality Control Commission regarding a change in the standards for the Rocky Flats ponds As a result of that hearing, temporary modifications for Segment 5 of Big Dry Creek were established for Plutonium and Americium The temporary modifications were needed to facilitate the state's issuance of the 401 Certification for the site's new NPDES permit The temporary modifications are in effect until December 31, 2000 Several important RFCA associated documents must be updated to provide protection for the segments downstream of Segment 5 Critical controlling documents include the Action Level Framework (ALF), Pond Operations Plan (POP), and the Integrated Monitoring Plan (IMP) All of the parties to the hearing are to be involved in revising these documents Since the permit has not been issued, what is the status of the changes to these documents? Shouldn't the ALF changes be included here? What is the status of the permit? There has been some discussion about placing the permit requirements in the RFCA instead of issuing a permit Shouldn't those changes be included here?

The RFCA Parties are continuing to work to resolve these issues As the issues have developed, the RFCA Parties have updated the Cities and will continue to do so. The Cities will be notified of every opportunity for public comment

Paragraph 5 - Pond Batch Release Operations Narrative Needs Updating
The narrative provided in Section 2 2 A 5 does not accurately reflect current pond water management practices

The proposed modifications to ALF did not affect this section, however, the RFCA Parties agree that the narrative should be modified to reflect current management practices. These modifications will be proposed in the future in accordance with the provisions of RFCA.

Paragraph 6 - Water Quality Exceedance Reporting Requirement Needs Updating
The Clean Water Act requires a 24-hour reporting requirement of any violation of a water quality standard Currently, the Action Level Framework (ALF) has a 15-day reporting requirement for exceedance of the plutonium and americium water quality standards For consistency, the current 15 day reporting requirement for plutonium and americium should be changed to a 24-hour reporting requirement As a practical matter, the site should be reporting plutonium and americium exceedances immediately Since plutonium and americium are the critical contaminants of concern, the legal reporting requirement in RFCA should be consistent with all other water quality violation notifications under the Clean Water Act

See above response to Westminster

Paragraph 7 - Subsurface Soil Action Levels May Not Be Protective Of Surface Water
Subsurface Soil Action Levels (SSL) for inorganic contaminants, including metals and radionuclides, have been provided for the first time in this year's revision to the ALF The RFCA parties have taken an overly simplistic and non-scientific approach in simply setting the SSL to be the same as the SAL Their assumption is that this will be conservative since the subsurface soils are buried and therefore not available for direct contact or erosion, but this fails to consider leaching and the groundwater to surface water pathway In the previous version of the ALF, it was stated that the SSL would be based on the leachability of the contaminant from the soil and the Tier I Groundwater Action Level The SSLs for organics were established using the leachability model and Groundwater Action Level The ALF states that if an appropriate subsurface soil-leaching model can be developed and accepted by the RFCA parties then the SSL may be revised

It is important to note that contaminants may behave much differently in the subsurface environment Subsurface-specific action levels need to be developed to ensure that they are protective both for surface water from groundwater seeps, and in the event that the subsurface soil is exposed and becomes surface soil as a result of a major soil erosion event The SAL does not consider anoxic or other conditions typically

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found in the groundwater environment Therefore, the SAL is not appropriate for use as a SSL Based on the uncertainties that have prevented the RFCA parties from previously developing a SSL, the SSL should be more conservative rather than using values which have already been highly criticized by the community Rather than using the SAL Tier I and II values, the Groundwater Tier I and II values should be employed as the interim SSL until an appropriate subsurface soil leaching model can be developed

The SSLs for organic contaminants do not appear to be protective of human health and the environment The Tier II cleanup level is a residual level of contaminant in the soil that modeling has shown will leach just enough of that contaminant to equal the MCL in groundwater Tier I is 100 times the MCL Some modeling efforts result in fairly accurate estimates while others can be wrong by two to three orders of magnitude Subsurface soils that are contaminated between the Tier II and Tier I levels are evaluated on a case-by-case basis No cleanup is required until the Tier I level is reached Therefore, soils which modeling predicts will cause an exceedance in groundwater up to 99 times the MCL might be allowed to remain untreated

As stated in this comment, the subsurface soil action levels do not consider groundwater transport of inorganic contaminants since an appropriate model does not exist EPA's Soil Screening Guidance, which was used for organic contaminants, cannot be used for inorganics As far as radionuclides are concerned, the current work by the Actinide Migration Evaluation Team may provide sufficient information to allow modeling. In the meantime, both the groundwater action levels and the surface water standards/action levels serve as monitors of any inorganic contaminants that may have entered the groundwater to surface water pathway. The groundwater action levels for radionuclides cannot be applied as subsurface soil action levels as suggested since they were developed from water-ingestion based calculations (pCi/L) which are not appropriate for measuring activity levels in soil (pCi/g) In the event described in the comment in which erosion exposes subsurface soil, using surface soil action levels would inherently be protective of direct exposures

Tier I subsurface soil action levels for organic contaminants were established to facilitate decision making by directing that soils which exceed those levels be removed Exceedances of Tier II for organics require an evaluation of impacts to surface water and ecological resources Therefore, all subsurface soil with levels of organic contaminants which exceed values calculated to be able to leach to groundwater at levels exceeding MCLs will be addressed

Paragraph 8 - Tier I Subsurface Soil Action Level for PCBs is Too High

As required by the Toxic Substances Control Act (TSCA) PCB (Aroclor) rules, PCBs detected at a concentration greater than 500 ppm requires the highest level of cleanup action Detection of PCBs at 50 ppm or greater in soils also triggers mandatory cleanup action According to the proposed ALF for subsurface soils, the Tier II level for PCBs would be 5 31 ppm and the Tier I level would be 531 ppm To be consistent with TSCA, USEPA typically requires a Tier I level of no more than 50 ppm on cleanup projects The Site's Tier I level of 531 ppm clearly exceeds both the TSCA mandatory cleanup values and therefore violates TSCA This example illustrates the caution, which should be used when such strong reliance is place on setting cleanup limits based on modeling results The RFCA principals need to continually reevaluate their modeling assumptions and consider all of the ARARs To comply with federal law, the proposed ALF must be revised so that the Tier I level for PCBs is no higher than 50 ppm

The proposed modifications to ALF did not affect this section, however, it is important to remember that cleanup limits (e g , chemical –specific applicable or relevant and appropriate requirements (ARAR)) are established in decision documents, not ALF Risk-based PPRGs (PPRGs are the basis for the ALF action levels for PCBs) may become a cleanup limit if no ARAR is available or the ARAR is not considered to be protective when more than one contaminant of concern is present For example, before a remedial decision was made for the removal of PCBs from the site the project managers, including representatives from the agencies, reviewed the preliminary remediation

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goals for PCBs At that time, an ARARs analysis was undertaken and the results were compared with a risk-based value that had been calculated by EPA and State toxicologists along with the site toxicologists. After review, the cleanup limit established in the decision document, based on an ARAR and not a risk-based value, was determined to be within the acceptable range based on an office worker exposed to soil A similar analysis will be conducted for each decision document.

See, Final Proposed Action Memorandum Remediation of Polychlorinated Biphenyls, May 1995 In that decision document, a soil cleanup standard of 25 ppm PCBs with a target of 10 ppm PCBs by weight was established based on the TSCA Spill Cleanup Policy (40 CFR 761, Subpart G)

Paragraph 9 - Surface Soil Action Levels May Not be Protective

The following compounds have a SAL as stated in Table 5 of the Attachment 5 of the ALF of " >1E+06 mg/kg ", in other words, 100% of that material left in place would be considered acceptable The compounds are aluminum, ammonium, benzoic acid, 2- butanone (MEK), diethylphthalate, dimethylphthalate, di-n-octylphthalate, endosulfan (various), nitrate, phenol, strontium, tin, vinyl acetate, xylene (total) In addition, there are many chlorinated solvents and other compounds which have Tier I levels in the thousands of parts per million (i e DDT = 1,680 ppm and chromium = 8,720 [III] to 102,000 [VI] ppm) Intuitively, it seems inappropriate to leave a phthalate or solvent in the soil at such high levels Have the regulatory agency toxicologists reviewed these action levels to ensure that they are protective of human health and the environment?

Many of the Tier I and Tier II values provided for inorganics in Table 4 and 5 are identical, for example, arsenic at 381 ppm for both Tier I and II levels Also, surface soil action levels for organics in Table 5 including Acenaphthene, acetone, and others are listed as having the same Tier I and II levels In contrast, in Table 4, which provides the subsurface soil action levels, the Tier I and II levels for acenaphthene vary by two orders of magnitude Please explain why the Table 4 and 5 inorganics and Table 5 organics have the same Tier I and II levels

As explained in the footnotes for Tables 4 and 5, Tier I action levels represent either a 10^{4} carcinogenic risk or a Hazard Index of 1 for non-carcinogenic toxicity Tier II action levels represent either a 10^{6} carcinogenic risk or a Hazard Index of 1 for non-carcinogenic toxicity. Action levels for chemicals which are carcinogenic have an associated 10^{4} - 10^{6} risk range calculated using slope factors Non-carcinogenic chemicals do not have a slope factor and action levels are calculated slightly differently using toxicity factors and a target hazard index. No range is associated with the non-carcinogenic values and it would be inappropriate to multiply those values by 100 to create an upper tier The surface soil action levels have been reviewed by EPA and CDPHE toxicologists, who assisted in their development along with toxicologists from the Site

Paragraph 10 - PPRG Surface Water Action Levels May Not Be Protective

Surface Water Action Levels have been set through the PPRG process for a number of organic contaminants that did not previously have an action level In general, the PPRG values are in the parts per million range and seem high compared to many of the pre-existing limits for other chemicals which are in the parts per billion range Have the regulatory agency toxicologists reviewed these action levels to ensure that they are protective of human health and the environment?

The surface water action levels have been reviewed by EPA and CDPHE toxicologists, who assisted in their development along with toxicologists from the Site The PPRGs were calculated using standard risk equations found in Appendix N of the Implementation Guidance (RFCA, Appendix 3)

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Paragraph 11 - Summary Comments

For PCBs, other organic chemicals, and inorganic contaminants, the Site is calculating and adopting cleanup limits that may or may not make sense both from regulatory and common sense points of view It seems that before the cleanup limits for both radiological and chemical contaminants are finalized, that an environmental toxicologist should conduct an independent assessment of those values

As stated above, EPA and State toxicologists have assisted in the development of PPRGs along with toxicologists from the site Please refer to the response to Paragraph 8 of the City of Broomfield letter above for a description of the analysis conducted to determine cleanup levels.

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Final RFCA
Attachment 5
May 17, 1999

Rocky Flats Environmental Technology Site Action Levels and Standards Framework for Surface Water, Ground Water, and Soils

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

FIGURES

TABLES

Final RFCA
Attachment 5
May 17, 1999

1 0 GENERAL BACKGROUND

1 1 Goal of Action Levels and Standards Framework

A working group consisting of the Department of Energy (DOE), the Environmental Protection Agency (EPA), the Colorado Department of Public Health and Environment (CDPHE), and Kaiser-Hill teams was formed to develop a consensus proposal for the appropriate cleanup standards and action levels that should apply to the Rocky Flats Environmental Technology Site (RFETS) This Action Levels and Standards Framework for Surface Water, Ground Water, and Soil (ALF) presents the final recommendation of the Working Group, incorporates comments from stakeholders, and is summarized in Summary Table 1 It has been developed in a manner generally consistent with the Rocky Flats Vision (Vision) and Rocky Flats Cleanup Agreement (RFCA) Preamble Objectives In some cases, the working group found it necessary to more precisely define aspects of the objectives so that applicability of action levels and required mitigating actions could be completely defined

The goal of the ALF is to

- provide a basis for future decision-making,
- define the common expectations of all parties, and
- incorporate land- and water-use controls into Site cleanup

~~Four~~ Five future conceptual land uses have been determined ~~and~~ for the purpose of making cleanup decisions ~~and t~~ Their approximate areal extents are delineated on the map attached to this document as Figure 1 These land use areas include (1) potential capped areas underlain by either waste disposal cells or contaminated materials closed in-place, (2) an industrial use area, (3) a restricted open space area, (4) another restricted open space area with low levels of plutonium contamination in surface soils, and (5) an unrestricted open space area that, while it would be managed as open space, actually could be available for any use The capped areas on Figure 1 are proposed and will be finalized in an RFETS Closure Plan At that time, the capped areas shown on Figure 1 not under an RFETS Closure Plan cap will be considered restricted open space

This document describes action levels, cleanup levels, put-back levels, and standards Action levels are numeric levels that, when exceeded, trigger an evaluation, remedial action, and/or management action Action levels will remain in effect and guide removal actions and other remedial efforts during the period of active remediation For interim remedial actions, interim cleanup levels will equal Tier I action levels unless some other ALF provision requires a greater level of cleanup (e g , protection of surface water) Following implementation of interim actions, final remedial/corrective action decisions, including final cleanup levels will be determined in a Corrective Action Decision/Record of Decision (CAD/ROD) The final remedial/corrective actions specified in a CAD/ROD

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may require additional work based on the final cleanup levels to ensure an adequate remedy

A standard is an enforceable narrative and/or numeric restriction established by regulation and applied so as to protect one or more existing or potential future uses Within this framework, standards are associated with surface water use classifications and applied at points of compliance (POCs) Standards are not being directly applied to ground water or soils Closure performance standards apply to Resource Conservation and Recovery Act (RCRA) units

Put-back levels are those levels at which excavated soils will be allowed to be replaced back into the ground For non-radionuclide chemicals, put-back levels are equivalent to interim cleanup levels Soils with radionuclide levels below Tier II action levels may be replaced, soils containing radionuclide levels above Tier I action levels may not be replaced Decisions regarding soils containing radionuclide levels between Tier I and Tier II will be determined on a case-by-case basis Because many of the variables used to determine put-back levels are project-specific, put-back level decisions should be made and explained within the decision documents associated with those actions Decision factors to be considered include remedy effectiveness and protectiveness, anticipated future land uses, contaminant levels in surrounding soils, potential for contaminants to affect surface water quality, and costs

Action levels for non-radionuclide chemicals are risk-based and chemical risk is considered additive when multiple chemicals are present Radionuclide action levels are dose-based and radiation dose is considered additive when multiple radionuclides are present Radionuclides and non-radionuclides will be assessed independently on a project-specific basis using methodology that is protective of human health and the environment The cumulative effects of radionuclides and non-radionuclide chemicals will be assessed on a project-specific basis if the chemical risk and/or radiation dose are near their respective Tier I action levels

~~Much of this framework is based on Maximum Contaminant Levels (MCLs) MCLs have been established by EPA for many chemical contaminants and represent the maximum permissible level of a contaminant in drinking water The regulatory citation that lists MCLs is Title 40 Code of Federal Regulations Parts 141 61 and 141 62 Where a MCL for a particular contaminant is lacking, the residential ground water ingestion based Preliminary Programmatic Remediation Goal (PPRG) will be used~~

1 2 Programmatic Assumptions

The working group developed this framework using the following inter-related programmatic or Site-Wide assumptions

- The framework must be consistent with the Vision and RFCA Preamble,
- Implementation of the framework must protect human health and the environment, and
- Implementation of the framework must protect surface water uses and quality

1 3 Action Prioritization and Implementation

Remedial decisions will be supportive of Intermediate and Long-Term Site Conditions as discussed in the RFCA Preamble Protection of all surface water uses with respect to fulfillment of the Intermediate and Long-Term Site Conditions will be the basis for making soil and ground water remediation and management decisions Actions will be designed to prevent adverse impacts to ecological resources and ground water consistent with the ALF Because the ALF does not address the inherent value of ground water, any residual effects on ground water not addressed through this Framework will be addressed under a Natural Resources Damage Assessment (NRDA)
Actions required as a result of exceedances of the standards or action levels described in this document will be prioritized on the Environmental Restoration (ER) Ranking The ER Ranking will, in turn, be considered in the Budget and Work Planning Process (RFCA, Part 11) These interim remedial decisions may be implemented by means of an accelerated action (Proposed Action Memorandum [PAM], Interim Measure/ Interim Remedial Action [IM/IRA], or RFCA Standard Operating Protocol [RSOP]) or addressed as necessary in the CAD/ROD for the affected area Actions will be developed in an integrated manner with other actions being taken and will be consistent with best management practices

2 0 SURFACE WATER

2 1 Basis for Standards and Action Levels

Protection of surface water will be a basis for making interim soil and groundwater cleanup and management decisions, so that at the completion of all cleanup activities, surface water leaving RFETS should be of sufficient quality to support all uses The surface water standards this framework is designed to protect are found in the WQCC Regulation No 31 Basic Standards and Methodologies for Surface Water (5 CCR 1002-31)("Basic Standards") and the site-specific water quality standards in the WQCC Regulation No 38 (5 CCR 1002-38)("Site-Specific Standards")

The Colorado Water Quality Control Commission (WQCC) determines water quality standards throughout Colorado Local municipalities, including Westminster, Broomfield, Thornton, and Northglenn, have been and will be involved and consulted in surface water decisions, including recommendations to the WQCC

Surface water exists in Areas 2, 3, and 4 on Figure 1, as well as immediately off-site The standards, action levels, and POCs are based on the following refinement of land uses (assuming current pond water transfer configurations)

- Area 2 (restricted open space) will include all surface water down to, and including, the terminal ponds (Ponds A-4 and B-5) in Walnut Creek For Woman Creek, only Pond C-2 is in Area 2 Therefore, the surface water in Area 2 is consistent with Segment 5 of Big Dry Creek

- Areas 3 and 4 (unrestricted open space and restricted open space due to low levels of surficial plutonium contamination, respectively) will include the streams from the terminal ponds to the plant boundary in Walnut Creek and all of Woman Creek except Pond C-2 The surface water in Areas 3 and 4 is part of Segment 4a/4b of Big Dry Creek

2 2 Numeric Levels During Active Remediation (Near-Term Site Condition)

During the period of active remediation, the Table 1 values will apply as standards in Segment 4a/4b of Big Dry Creek and as action levels in Segment 5

A Non-radionuclides

1 The numeric values that will apply throughout both stream segments are based on Colorado surface water use classifications consistent with the

uses described in the RFCA Preamble

- Water Supply,
- Aquatic Life - Warm 2,
- Recreation 2, and
- Agricultural

2 Numeric values will be derived from the following

a For metals, the site-specific standards or the basic standards apply, except where temporary modifications apply If the basic and site-specific standards differ for a particular metal, the site-specific standard applies

b For inorganics, the site-specific standards apply or the basic standards apply, except where temporary modifications apply If the basic or site-specific standards differ for a particular inorganic, the site-specific standard applies

~~c Any contamination in surface water resulting from releases from a unit at RFETS subject to RCRA interim status requirements will be addressed through this ALF and through remedial actions rather than through RCRA closure (see Attachment 10 to RFCA, RCRA Closure for Interim Status Units) This would include surface water containing nitrates that has been impacted by the Solar Ponds ground water plume Addressing the nitrates through this framework will allow these waters to be managed in a more cost-effective and flexible manner The parties recognize that changes in the management of nitrates may cause the surface water to more routinely approach the current 10 mg/L standard at the POC~~

~~d Due to detention and batch release operations of Pond A-4 and Pond B-5 waters, exceedance of the numerical pH of 9 00 occurs Both the wastewater treatment plant effluent and storm water inflows to the ponds have pH values within the numerical range of 6 5 to 9 00 prior to detention in Pond B-5 and A-4, however, the nutrient loading to the ponds promotes algae growth which can shift carbonate equilibria These conditions cause pH exceedance above 9 00 (with a calculated 85th percentile value of 9 10) All parties agree that aquatic use is likely not impacted by pH exceedances, however, the DOE shall will strive to control pH in the pond waters through prudent pond water management~~

c For organic chemicals, the more stringent of the basic standards or the site-specific standards applies, except where temporary modifications apply

3 Effective March 2 1997, MCLs were adopted as temporary modifications for six organic compounds in Segment 5 These temporary modifications of surface water standards were granted through the year 2009 by the WQCC and must be re-examined every three years Other temporary modifications to the numeric values during active remediation may be developed through subsequent working group efforts

a The basis for proposing the temporary modifications may include one or more of the following

- A determination of ambient conditions in a manner ~~similar to the existing Segment 5 temporary modifications~~ consistent with the Basic Standards (5 CCR 1002-31),
- A mass-balance equation that calculates maximum influent concentrations in Segment 5 that will be protective of numeric values at Segment 4a/4b POCs without allowing treatment within waters of the State, and
- Some other methodology agreed to by all parties

b These temporary modifications should be developed together with other stakeholders (i e , the local municipalities that are impacted by surface water from the RFETS)

4 Any contamination in surface water resulting from releases from a unit at RFETS subject to RCRA interim status requirements will be addressed through this ALF and through remedial actions rather than through RCRA closure (see Attachment 10 to RFCA, RCRA Closure for Interim Status Units) This would include surface water containing nitrates that has been impacted by the Solar Ponds ground water plume Addressing the nitrates through this framework will allow these waters to be managed in a more cost-effective and flexible manner The parties recognize that changes in the management of nitrates may cause the surface water to more routinely approach the current 10 mg/L standard at the POC

5 Due to detention and batch release operations of Pond A-4 and Pond B-5 waters, exceedance of the numerical pH of 9 00 occurs Both the wastewater treatment plant effluent and storm water inflows to the ponds have pH values within the numerical range of 6 5 to 9 00 prior to detention in Pond B-5 and A-4, however, the nutrient loading to the ponds promotes

algae growth which can shift carbonate equilibria These conditions cause pH exceedance above 9 00 (with a calculated 85th percentile value of 9 10) All parties agree that aquatic use is likely not impacted by pH exceedances, however the DOE ~~shall~~ will strive to control pH in the pond waters through prudent pond water management

B Radionuclides

1 Numeric values for plutonium and americium for Segments 4a/4b and 5 are risk-based (10^{-6} increased carcinogenic risks to human health from direct exposure including consumption) These values are the state-wide basic standards, effective March 2, 1997, as set by the WQCC

2 Both radionuclides will be analyzed separately, and compared to the numeric value below

- 0 15 pCi/L for plutonium and
- 0 15 pCi/L for americium

There is no total pCi/L limit

3 The parties agree that in the ~~unlikely~~ event that the plutonium and americium numerical standards are exceeded, the DOE will make every effort to identify the source of the exceedance This will include documenting hydrologic characteristics, preventive actions, terminal pond operational parameters, and any abnormal conditions and occurrences Further, specific decisions regarding the terminal pond operations and the release of water will be guided by the Pond Operations Plan This plan includes specific responses for identified circumstances and preserves dam safety DOE shall have the burden to demonstrate prudent pond water management and strive to maintain the lowest detained volume practicable in the terminal ponds

4 In Segments 4a/4b and 5, numeric values for ~~other radionuclides~~ gross alpha, gross beta tritium and uranium will be the site-specific standards found in Table 2 of 5 CCR 1002-8~~, §3 8 0~~ -38 Numeric values for radium and strontium are based on the state-wide Basic Standards (5 CCR 1002-31 11) The parties will re-examine these values based upon conditions in the basins and will propose alternative values if appropriate

C POCs/Action Level Measuring Points

1 In Segment 4a/4b, POCs will be placed at the existing sampling locations

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for the outfalls of the terminal ponds (Ponds A-4, B-5, and C-2) in both Walnut Creek and Woman Creek Additional POCs for plutonium, americium, and tritium will be established near where Indiana Street crosses Walnut and Woman Creeks In the event that exceedances simultaneously occur for either plutonium, americium, ~~and~~ or tritium at both the Indiana Street POC and the associated Terminal Pond POC, then this occurrence will be treated as a single enforcement action As conditions at the RFETS change, the locations of the POCs may need to change Such changes can be made by agreement of the Parties pursuant to Part 9 of RFCA

2 In Segment 5, exceedance of action levels will be measured in the ponds and upstream in the main stream channel at existing gaging/sampling stations or at additional sampling locations in the main stream channel as necessary

3 Compliance will be measured using a 30-day moving average for those contaminants for which this is appropriate When necessary to protect a particular use, acute and chronic levels will be measured differently as described in the current Integrated Monitoring Plan

2 3 Numeric Levels After Active Remediation (Intermediate and Long-Term Site Conditions)

When the Intermediate Site Condition is achieved following completion of active remediation, the surface water must be of sufficient quality to support any surface water use classification in both Segments 4a/4b and 5 All final remedies must be designed to protect surface water for any use as measured at the nearest and/or most directly impacted surface water in Segments 4a/4b and 5 Interim remedies will be consistent with this as a goal Any temporary modifications will be removed POCs will be at the outfalls of the terminal ponds and near where Indiana Street crosses both Walnut and Woman Creeks If the terminal ponds are removed, new monitoring and compliance points will be designated and will consider ground water in stream alluvium

2 4 Action Determinations

A When contaminant concentrations exceed the Table 1 standards at a POC, source evaluation and mitigating action will be required Specific remedial actions will be determined on a case-by-case basis, but must be designed such that surface water will meet applicable standards at the POCs ~~In the case of~~ If standards are exceeded at a POC, DOE will inform the CDPHE and EPA of such exceedances

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within 15 days of gaining knowledge of the exceedances In addition, DOE will, within 30 days of gaining knowledge of the exceedances, submit to CDPHE and EPA a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action Final plans and schedules for mitigating actions will be developed and implemented by DOE, in c CDPHE and EPA, following completion of the source evaluation Nothing in this paragraph, however, shall preclude DOE from undertaking timely mitigation once a source has been identified Once an initial notification, source evaluation, and mitigating action have been triggered for a particular exceedance, additional exceedances from the same source would not require separate notifications or additional source evaluations or mitigation The Standley Lake Protection Project (SLPP) Operations Agreement addresses conditions and timing of storage and releases of waters in the Woman Creek Reservoir Consistent with the SLPP Operations Agreement, it is the intent of the Parties that waters which meet the standards at the Indiana Street POC are acceptable for any use

B During active remediation, when contaminant concentrations in Segment 5 exceed the Table 1 action levels, source evaluation will be required If mitigating action is appropriate, the specific actions will be determined on a case-by-case basis, but must be designed such that surface water will meet applicable standards at the POCs In the case of action level exceedances in Segment 5, DOE will inform the CDPHE and EPA of such exceedances within 15 days of gaining knowledge of the exceedances In addition, DOE will, within 30 days of gaining knowledge of the exceedances, submit to CDPHE and EPA a plan and schedule for source evaluation for the exceedance, including a preliminary plan and schedule for mitigating action Final plans and schedules for mitigating actions will be developed and implemented by DOE, in consultation with CDPHE and EPA, following completion of the source evaluation Nothing in this paragraph, however, shall preclude DOE from undertaking timely mitigation once a source has been identified Once an initial notification, source evaluation, and mitigating action (if appropriate) have been triggered for a particular exceedance, additional exceedances from the same source would not require separate notifications or additional source evaluations or mitigation

C Exceedances of water quality standards at a POC may be subject to civil penalties under sections 109 and 310(c) of CERCLA In addition, failure of DOE to notify CDPHE and EPA of such exceedances, or to undertake source evaluations or mitigating actions as described in paragraph 2 4 A, above, shall be enforceable consistent with the terms of Part 16 of the RFCA

D Exceedances of action levels in Segment 5 shall not be subject to civil penalties However, failure of DOE to notify CDPHE and EPA of such exceedances, or to undertake source evaluations or mitigating actions (if appropriate) as described in

paragraph 2 4 B above, shall be enforceable consistent with the terms of Part 16 of the RFCA

2 5 Surface Water Monitoring Network

A Surface water monitoring will continue as currently established unless subsequent changes are agreed to by all parties Surface water monitoring will be consistent with the Integrated Monitoring Plan which will be reviewed and revised on an annual basis

B All parties will receive quarterly surface water monitoring reports which will highlight any exceedances of surface water standards or action levels and any significant changes to surface water flow conditions

3 0 GROUND WATER

3 1 Basis of Action Levels

At the time RFCA was signed, three ground water classifications applied at RFETS Domestic Use Quality, Agricultural Use Quality, and Surface Water Protection Effective March 2, 1997, the WQCC removed the domestic use and agricultural use classifications since direct use of ground water will be prevented at the Site through institutional controls Surface water protection was retained as the only use classification for ground water at RFETS During the period of active remediation, ground water action levels will apply and must be protective of surface water standards and quality as well as of ecological resources Since no other human exposure to on-site ground water is foreseen, ground water action levels are based on surface water and ecological protection This framework for ground water action levels assumes that all contaminated ground water emerges to surface water before leaving the RFETS

3 2 Action Level Strategy

The strategy for ground water is intended to prevent contamination of surface water by applying MCLs as ground water action levels MCLs have been established by EPA for many chemical contaminants and represent the maximum permissible level of a contaminant in drinking water MCLs are listed at 40 CFR 141 61 and 141 62 Where an MCL for a particular contaminant is lacking, the residential ground water ingestion-based PPRG value will apply Ground water action levels are based on a two-tier approach, Tier I action levels consist of near-source action levels for accelerated cleanups, and Tier II are action levels which are protective of surface water

A Tier I

1 Action levels consist of 100 x MCLs (see Table 2)

2 Designed to identify high concentration ground water "sources" that should be addressed through accelerated actions

B Tier II

1 Action levels consist of MCLs (see Table 2)

2 Designed to prevent surface water from exceeding surface water standards/action levels by triggering ground water management actions when necessary

3 Situations where ground water is contaminating or could contaminate surface water at levels above surface water standards/action levels will trigger a Tier II action

4 Tier II Action Levels are to be measured in designated wells

a Tier II wells have been selected by all parties from the existing monitoring network where practical New wells have been proposed where apparent gaps exist Designated Tier II wells are listed in Table 3

b Tier II wells are either currently uncontaminated or contaminated at levels less than MCLs In general, Tier II wells are located between the downgradient edge of each plume and the surface water towards which the plume is most directly migrating

c If the proposed new wells are shown to be contaminated or if additional plume information dictates, new or alternate wells will need to be chosen

3 3 Action Determinations

A Tier I

1 If Tier I action levels are exceeded, an evaluation is required to determine if remedial or management action is necessary to prevent surface water from exceeding standards If this evaluation determines that action is necessary, the type and location of the action will be delineated and implemented as an accelerated action This evaluation may include a trend analysis based on existing data Accelerated action priority will be given to plumes showing no significant decreasing trend in ground water contaminant concentrations over 2 years

2 ~~Where background levels exceed action levels, more frequent sampling and remedial actions will not be triggered For those constituents where high background levels exist, a modified action level considering background will be developed~~

~~3~~ Additional ground water that does not exceed the Tier I action levels may still need to be remediated or managed through accelerated actions or CAD/RODs to protect surface water quality or ecological resources and/or prevent action level exceedances at Tier II wells (e g , lower-level, but

fast-moving contamination) The plume areas to be remediated and the cleanup levels or management techniques utilized will be determined on a case-by-case basis

B Tier II

1 If concentrations in a Tier II well exceed MCLs during a regular sampling event, as specified in the Integrated Monitoring Plan, monthly sampling in that well will be required Three consecutive monthly samples showing contaminant concentrations greater than MCLs will trigger an evaluation This will require a ground water remedial action, if ~~modelling~~ modeling, which considers mass balancing and flux calculations and multiple source contributions, predicts that surface water action levels will be exceeded in surface water These actions will be determined on a case-by-case basis and will be designed to treat, contain, manage, or mitigate the contaminant plume Such actions will be incorporated into the ER Ranking (RFCA Attachment 4) in which they will be given weight according to measured or predicted impacts to surface water

2 Ground water contaminated at levels above ground water action levels currently exists at several locations Each of these situations will be addressed according to appropriate decision documents

3 Any contamination in ground water resulting from releases from a unit at RFETS subject to RCRA interim status requirements will be addressed through this ALF and through remedial actions rather than through RCRA closure (see Attachment 10 to RFCA, RCRA Closure for Interim Status Units) This would include ground water containing nitrates from the Solar Ponds plume Addressing the nitrates through this framework will allow these waters to be managed in a more cost-effective and flexible manner

C Other Considerations

1 Efficient, cost-effective, and feasible actions that are taken to remediate or manage contaminated ground water may not necessarily be taken at the leading edge of plumes, but rather at a location within the plume Factors contributing to this situation could include technical impracticability at the plume edge, topographic or ecologic problems at the plume edge, etc This situation may result in a portion of a plume that will not be remediated or managed This plume portion may cause exceedance of MCLs at Tier II wells or exceedance of surface water standards/action levels When an up-gradient ground water action is taken that results in

this situation, DOE and its subcontractor may request relief from the ground water and/or surface water standards CDPHE and EPA will evaluate the request and may grant temporary relief or a change to the standards/action levels for a specific area Soil or subsurface soil source removals will not be considered as the sole justification for the changed standard/action levels In addition, such changes will be determined such that surface water use classifications are not jeopardized and surface water quality does not exceed standards at POCs

2 Ground water plumes that can be shown to be stationary and do not therefore present a risk to surface water, regardless of their contaminant levels, will not require remediation or management They will require continued monitoring to demonstrate that they remain stationary

3 Where background levels exceed action levels, more frequent sampling and remedial actions will not be triggered For those constituents where high background levels exist, a modified action level considering background will be developed

4 When groundwater action levels for volatile organic compounds (VOCs) are exceeded in the vicinity of buildings designated for reuse, human-health risks due to inhalation of indoor accumulations of those VOCs must be considered When such an exceedance occurs in the Industrial Use Area, the evaluation which is triggered must include a comparison against the appropriate PPRGs which have been calculated for office worker exposure to indoor air

3 4 Ground Water Monitoring Network

A Ground water monitoring will be consistent with the Integrated Monitoring Plan which will be reviewed on an annual basis

B All ground water monitoring data as well as changes in hydrologic conditions and exceedances of ground water ~~standards~~ action levels will be reported quarterly and summarized annually to all parties

C If quarterly reporting shows that previously uncontaminated wells are contaminated above ground water ~~standards~~ action levels, the sampling frequency will be increased to monthly Three consecutive monthly samples showing exceedances will trigger an evaluation to determine if a remedial or management action is necessary If three consecutive monthly samples then show no exceedances, the sampling frequency will revert back to the frequency specified

in the Integrated Monitoring Plan

D All ground water plumes that exceed ground water ~~standards~~ action levels must continue to be monitored until the need for institutional controls is mitigated

E All ground water remedies, as well as some soil remedies, will require ground water performance monitoring The amount, frequency, and location of any performance monitoring will be based on the type of remedy implemented and will be determined on a case-by-case basis within decision documents The remedy should also consider that surface water quality will be acceptable for all uses after active remediation

4 0 SUBSURFACE SOIL

4 1 Basis for Action Levels

Subsurface soil is defined as soil deeper than six inches below the ground surface Action levels for subsurface soil are intended to be protective of

- human exposure appropriate for the land uses delineated on Figure 1,
- surface water standards via ground water transport, and
- ecological resources

4 2 Action Levels

The subsurface soil action levels have been calculated using a two-tier approach

A Tier I

1 All subsurface soils capable of leaching organic compounds to ground water at concentrations greater than or equal to 100 x MCLs Where an MCL for a particular contaminant is lacking, the residential ground water ingestion-based PPRG value will apply Contaminant-specific Tier I action levels for organics have been determined using a soil/water partitioning equation and a dilution factor from EPA's Soil Screening Guidance (1996) These derived values and the parameters used to derive them are listed in Table 4 of this document The subsurface media characteristics for these calculations are based on Site-specific data or conservative values where representative RFETS values cannot be determined Where subsurface characteristics in a particular area within RFETS differ significantly from those chosen as representative of the entire Site, those alternate values should be used When refined parameters are agreed to by the Parties, alternative, site-specific action levels may be calculated

2 Tier I action levels for inorganic contaminants in subsurface soil are the same as Tier I action levels for the corresponding contaminants in surface soil These action levels are, therefore, human-health risk-based for the appropriate land-use receptor (office worker or open space recreational user) If an accurate subsurface soil leaching model can be developed for RFETS in the future and is agreed upon by the RFCA Parties, this application may need to be updated

3 Tier I action levels derived for radionuclides in surface soil are also applied as Tier I action levels for radionuclides in subsurface soil They are the more conservative of

a An annual radiation dose limit of 15 mrem for the appropriate land use receptor, or

b An annual radiation dose limit of 85 mrem for a hypothetical future resident assuming failure of passive control measures

The total dose from multiple radionuclides will be accounted for by applying the sum-of-ratios method

B Tier II

1 All subsurface soils capable of leaching organic compounds to ground water at concentrations greater than or equal to MCLs Where an MCL for a particular contaminant is lacking, the residential ground water ingestion-based PPRG value will apply Contaminant-specific Tier I action levels for organics, have been determined using a soil/water partitioning equation and a dilution factor from EPA's Soil Screening Guidance (1996) These derived values and the parameters used to derive them are listed in Table 4 of this document The subsurface media characteristics for these calculations are based on Site-specific data or conservative values where representative RFETS values cannot be determined Where subsurface characteristics in a particular area within RFETS differ significantly from those chosen as representative of the entire Site, those alternate values should be used When refined parameters are agreed to by the Parties, alternative, site-specific action levels may be calculated

2 Tier II action levels for inorganic contaminants in subsurface soil are the same as Tier II action levels for the corresponding contaminants in surface soil These action levels are, therefore, based on risk to the appropriate land-use receptor (office worker or open space recreational user) If an accurate subsurface soil leaching model can be developed for RFETS in the future and is agreed upon by the RFCA Parties, this application may need to be updated

3 Tier II action levels derived for radionuclides in surface soil are also applied as Tier II action levels for radionuclides in subsurface soil Action levels for radionuclides are based on an annual dose of 15 mrem to a

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hypothetical future resident The total dose from multiple radionuclides will be accounted for by applying the sum-of-ratios method

4 Additional subsurface soil may need to be remediated or managed to protect surface water quality via ground water transport or ecological resources Subsurface soil presenting unacceptable ecological risks (hazard index [HI] ≥ 1) identified using the ~~approved methodology~~ Ecological Risk Assessment Methodology will be evaluated for remediation or management

4 3 Action Determinations

A Tier I

When contaminant levels in subsurface soil exceed Tier I action levels, subsurface soil source removals will be triggered These removals will be accomplished through accelerated actions

B Tier II

When Tier II action levels are exceeded, an evaluation will be made to determine if an action is necessary to protect surface water or ecological resources If an action is shown to be necessary, a process to identify, evaluate, and implement efficient, cost-effective, and feasible remediation or management actions will be triggered

C Appropriate remedial or management actions will be determined on a case-by-case basis, and may include the removal, treatment, disposal, or in-place stabilization of contaminated subsurface soils Actions will consider the following

- Actions will be developed in an integrated manner with other actions being taken,
- Actions will be consistent with best management practices,
- Actions may be accomplished by means of an interim or final action, and
- Remediation and/or management actions will be implemented to protect ecological resources where those actions can be implemented without damaging other ecological resources

D Single geographically isolated data points of subsurface soil contamination above the Tier I or Tier II action levels will be evaluated for potential source magnitude These single points will not necessarily trigger a source removal, remedial, or

management action, depending on the source evaluation

E When subsurface soil action levels for volatile organic compounds (VOCs) are exceeded in the vicinity of buildings designated for reuse, human-health risks due to inhalation of indoor accumulations of those VOCs must be considered When such an exceedance occurs in the Industrial Use-Area, the evaluation which is triggered must include a comparison against the appropriate PPRGs which have been calculated for office worker exposure to indoor air

5 0 SURFACE SOIL

5 1 Basis for Action Levels

Surface soil is defined as the upper six inches of soil Action levels for surface soil are intended to be protective of

- human exposure appropriate for the land uses delineated on Figure 1,
- surface water quality via runoff, and
- ecological resources

5 2 Action Levels

The surface soil action levels have been calculated using a two-tier approach based on protection of appropriate human exposure

A Tier I

1 Action levels for non-radionuclides are human-health risk-based (carcinogenic risk equal to 10^{-4} and/or an HI of 1) for the appropriate land-use receptor Table 5 presents the calculated action levels for these exposure scenarios

a Industrial Use Area (Area 1 on Figure 1) Action levels are based on Office Worker exposure as defined in the ~~finalized~~ final PPRG document

b Restricted Open Space Area (Area 2 and 4 on Figure 1) Action levels are based on Open Space Recreational User exposure as defined in the ~~finalized~~ final PPRG document

2 Action levels for radionuclides will be the more conservative of

a An annual radiation dose of 15 mrem for the appropriate land use receptor, or

b An annual radiation dose of 85 mrem for a hypothetical future resident assuming failure of passive control measure

The total dose from multiple radionuclides will be accounted for by

applying the sum-of-ratios method

B Tier II

1 Action levels for non-radionuclides are human-health risk-based (carcinogenic risk of 10^{-6} and/or an HI of 1) for the appropriate land-use receptor Table 5 presents the calculated action levels for these exposure scenarios

a Industrial Use Area (Area 1 on Figure 1) Action levels are based on Office Worker exposure as defined in the ~~finalized~~ final PPRG document

b Restricted Open Space Area (Area 2 and 4 on Figure 1) Action levels are based on Open Space Recreational User exposure as defined in the ~~finalized~~ final PPRG document

2 Action levels for radionuclides are based on an annual radiation dose of 15 mrem to a hypothetical future resident The total dose from multiple radionuclides will be accounted for by applying the sum-of-ratios method

3 Additional surface soil may need to be remediated or managed to protect surface water quality via runoff or ecological resources The amount of soil and the protective remediation levels and/or management technique will be determined on a case-by-case basis Surface soil presenting unacceptable ecological risks (a HI greater than or equal to 1) identified using the ~~approved methodology~~ Ecological Risk Assessment Methodology will be evaluated for remediation or management

5 3 Action Determinations

A Tier I

When contaminant levels in surface soil exceed Tier I action levels, a process to identify, evaluate and implement efficient, cost-effective, and feasible remediation or management actions will be triggered Appropriate remedial or management actions will be determined through this process on a case-by-case basis, and may include the removal, treatment, disposal, or in-place stabilization of contaminated surface soils

B Tier II

When contaminant levels in surface soil exceed Tier II action levels, they will be managed Management may include, but is not limited to, "hotspot" removal, capping, or designating land uses that preclude unacceptable exposure

C Actions will consider the following

- Actions will be developed in an integrated manner with other actions being taken,
- Actions will be consistent with best management practices,
- Actions may be accomplished by means of an interim or final action, and
- Remediation and/or management actions will be implemented to protect ecological resources where those actions can be implemented without damaging other ecological resources

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